

What is claimed is:

1 1. A broadcasting apparatus comprising:

2 a transmitting means for transmitting an interactive
3 content as a data carousel over a span of a scheduled broadcasting
4 time period; and

5 a transmission control means for controlling the
6 transmitting means so as to (a) start pre-transmitting the
7 interactive content a predetermined time before the start of the
8 scheduled broadcasting time period, and (b) repeatedly transmit a
9 cache message that instructs a receiving apparatus to cache the
10 interactive content into a storage unit in the receiving apparatus
11 while the transmitting means pre-transmits the interactive content
12 over a span of the predetermined time period.

1 2. The broadcasting apparatus of Claim 1, wherein

2 the scheduled broadcasting time period spans from a time
3 when the receiving apparatus is to start reproducing the
4 interactive content to a time when the receiving apparatus is to
5 end reproducing the interactive content.

1 3. The broadcasting apparatus of Claim 1, wherein

2 the transmission control means controls the transmitting
3 means so as to transmit a reproduction message that conveys that
4 the interactive content cached in the storage unit in the
5 receiving apparatus should be reproduced over the span of the

6 scheduled broadcasting time period.

1 4. The broadcasting apparatus of Claim 3, wherein

2 the reproduction message (a) specifies a time when a
3 reproduction should start and (b) includes an instruction to start
4 the reproduction at the specified time, and

5 the transmission control means repeatedly transmits the
6 reproduction message while the transmitting means pre-transmits
7 the interactive content over the span of the predetermined time
8 period.

1 5. The broadcasting apparatus of Claim 3, wherein

2 the reproduction message includes an instruction to
3 start a reproduction immediately after the reproduction message is
4 received, and

5 the transmission control means instructs the
6 transmitting means to transmit the reproduction message at the
7 start of the scheduled broadcasting time period.

1 6. The broadcasting apparatus of Claim 3, wherein

2 the transmission control means includes:

3 a schedule storage unit for storing a time 1, a time 2,
4 and a time 3 which correspond to the interactive content, the time
5 1 being a time when the transmitting means starts pre-transmitting
6 the interactive content the predetermined time before the start of

7 the scheduled broadcasting time period, the time 2 being the start
8 of the scheduled broadcasting time period, and the time 3 being
9 the end of the scheduled broadcasting time period;

10 a data carousel control unit for controlling the
11 transmitting means to transmit the interactive content over a span
12 of the time 1 to the time 3 stored in the schedule storage unit;
13 and

14 a message control unit for instructing the transmitting
15 means to repeatedly transmit the cache message over a span of the
16 time 1 to the time 2 stored in the schedule storage unit, and
17 instructing the transmitting means to transmit the reproduction
18 message at the time 2.

1 7. The broadcasting apparatus of Claim 1, wherein

2 the transmitting means further broadcasts a video
3 content over the span of the scheduled broadcasting time period,
4 the video content containing video and audio data, and

5 the interactive content is closely related to the video
6 content.

1 8. The broadcasting apparatus of Claim 7, wherein

2 the video content is a commercial and is synchronized
3 with the interactive content.

1 9. The broadcasting apparatus of Claim 7, wherein

2 the video content is one of a movie, a drama, a sports
3 broadcast program, and a news broadcast program, and the
4 interactive content is either an introduction or a detail of the
5 video content.

1 10. The broadcasting apparatus of Claim 7, wherein

2 the transmission control means controls the transmitting
3 means so as to transmit a reproduction message that conveys that
4 the interactive content cached in the storage unit in the
5 receiving apparatus should be reproduced over the span of the
6 scheduled broadcasting time period.

1 11. The broadcasting apparatus of Claim 10, wherein

2 the reproduction message (a) specifies a time when a
3 reproduction should start and (b) includes an instruction to start
4 the reproduction at the specified time, and

5 the transmission control means repeatedly transmits the
6 reproduction message while the transmitting means pre-transmits
7 the interactive content over the span of the predetermined time
8 period.

1 12. The broadcasting apparatus of Claim 10, wherein

2 the reproduction message includes an instruction to
3 start a reproduction immediately after the reproduction message is
4 received, and

5 the transmission control means instructs the
6 transmitting means to transmit the reproduction message at the
7 start of the scheduled broadcasting time period.

1 13. The broadcasting apparatus of Claim 10, wherein

2 the transmission control means includes:

3 a schedule storage unit for storing a time 1, a time 2,
4 and a time 3 which correspond to the interactive content, the time
5 1 being a time when the transmitting means starts pre-transmitting
6 the interactive content the predetermined time before the start of
7 the scheduled broadcasting time period, the time 2 being the start
8 of the scheduled broadcasting time period, and the time 3 being
9 the end of the scheduled broadcasting time period;

10 a data carousel control unit for controlling the
11 transmitting means to transmit the interactive content over a span
12 of the time 1 to the time 3 stored in the schedule storage unit;
13 and

14 a message control unit for instructing the transmitting
15 means to repeatedly transmit the cache message over a span of the
16 time 1 to the time 2 stored in the schedule storage unit, and
17 instructing the transmitting means to transmit the reproduction
18 message at the time 2.

1 14. A receiving apparatus comprising:

2 a receiving means for receiving an interactive content

3 which is transmitted as a data carousel;

4 a reproducing means for reproducing the received
5 interactive content; and

6 a reception control means for controlling the
7 reproducing means so as to (a) cache the interactive content into
8 a storage unit, not reproducing the interactive content, while the
9 interactive content is received before the start of a scheduled
10 broadcasting time period, and (b) reproduce the interactive
11 content during the scheduled broadcasting time period.

1 15. The receiving apparatus of Claim 14

2 further receiving a cache message that instructs to
3 cache the interactive content, wherein

4 the reception control means caches the interactive
5 content into the storage unit in accordance with the received
6 cache message.

1 16. The receiving apparatus of Claim 15

2 further receiving a reproduction message that instructs
3 to start reproducing the interactive content, wherein

4 the reception control means reproduces the interactive
5 content cached in the storage unit in accordance with the received
6 reproduction message.

1 17. The receiving apparatus of Claim 16, wherein

2 the reception control means starts reproducing the
3 interactive content cached in the storage unit, upon receipt of
4 the reproduction message.

1 18. The receiving apparatus of Claim 16, wherein

2 the reception control means reproduces the interactive
3 content cached in the storage unit, starting at a time indicated
4 by the received reproduction message.

1 19. A broadcasting system including a broadcasting apparatus and
2 a receiving apparatus, wherein

3 the broadcasting apparatus comprises:

4 a transmitting means for transmitting an interactive
5 content as a data carousel over a span of a scheduled broadcasting
6 time period; and

7 a transmission control means for controlling the
8 transmitting means so as to (a) start pre-transmitting the
9 interactive content a predetermined time before the start of the
10 scheduled broadcasting time period, and (b) repeatedly transmit a
11 cache message that instructs a receiving apparatus to cache the
12 interactive content into a storage unit in the receiving apparatus
13 while the transmitting means pre-transmits the interactive content
14 over a span of the predetermined time period, and

15 the receiving apparatus comprises:

16 a receiving means for receiving the interactive content

17 transmitted as the data carousel;

18 a reproducing means for reproducing the received
19 interactive content; and

20 a reception control means for controlling the
21 reproducing means so as to (a) cache the interactive content into
22 a storage unit, not reproducing the interactive content, while the
23 interactive content is received before the start of a scheduled
24 broadcasting time period, and (b) reproduce the interactive
25 content during the scheduled broadcasting time period.

1 20. A broadcasting method of allowing a broadcasting apparatus to
2 transmit a data carousel, comprising:

3 a first transmitting step for pre-transmitting an
4 interactive content as the data carousel, starting a predetermined
5 time before the start of a scheduled broadcasting time period;

6 a cache message transmitting step for repeatedly
7 transmitting a cache message that instructs a receiving apparatus
8 to cache the interactive content into a storage unit in the
9 receiving apparatus while the interactive content is pre-
10 transmitted in the first transmitting step; and

11 a second transmitting step for broadcasting the
12 interactive content as the data carousel during the scheduled
13 broadcasting time period.

1 21. The broadcasting method of Claim 20, wherein

2 the scheduled broadcasting time period spans from a time
3 when the receiving apparatus is to start reproducing the
4 interactive content to a time when the receiving apparatus is to
5 end reproducing the interactive content.

1 22. The broadcasting method of Claim 21 further comprising:

2 a reproduction message transmitting step for
3 transmitting a reproduction message that instructs the receiving
4 apparatus to reproduce the interactive content cached in the
5 storage unit when a transmission starts at some time in either the
6 first transmitting step or the second transmitting step.

1 23. A computer readable medium for use with a computer, storing
2 a computer program that allows a broadcasting apparatus to
3 transmit a data carousel, the computer program allowing a computer
4 in the broadcasting apparatus to execute:

5 a first transmitting step for pre-transmitting an
6 interactive content as the data carousel, starting a predetermined
7 time before the start of a scheduled broadcasting time period;

8 a cache message transmitting step for repeatedly
9 transmitting a cache message that instructs a receiving apparatus
10 to cache the interactive content into a storage unit in the
11 receiving apparatus while the interactive content is pre-
12 transmitted in the first transmitting step; and

13 a second transmitting step for broadcasting the

14 interactive content as the data carousel during the scheduled
15 broadcasting time period.

1 24. A computer program that allows a broadcasting apparatus to
2 transmit a data carousel, the computer program allowing a computer
3 in the broadcasting apparatus to execute:

4 a first transmitting step for pre-transmitting an
5 interactive content as the data carousel, starting a predetermined
6 time before the start of a scheduled broadcasting time period;

7 a cache message transmitting step for repeatedly
8 transmitting a cache message that instructs a receiving apparatus
9 to cache the interactive content into a storage unit in the
10 receiving apparatus while the interactive content is pre-
11 transmitted in the first transmitting step; and

12 a second transmitting step for broadcasting the
13 interactive content as the data carousel during the scheduled
14 broadcasting time period.